

## TROPICAL STORM ROGER (20W)

Forming just north of Taiwan, Roger moved southeastward into the southern Ryukyu Islands, abruptly turned northeastward, and made landfall on Honshu. At the start, the forecast problem for this tropical cyclone was exacerbated by the difficulty in locating the system's complex center during its formative stages and the immediate threat it posed to DOD assets on Okinawa.

On 23 August, a tropical disturbance rapidly consolidated just north of Taiwan. Because of the developed cloud signature, JTWC opted to issue a Tropical Cyclone Formation Alert at 230500Z instead of reissuing the Significant Tropical Weather Advisory. When further development did not occur as rapidly as anticipated, the Alert was reissued the following day. Satellite data detected multiple vortices near the main convection mass and there was uncertainty about just where the system was going to consolidate. The fairly dense network of ship and land observations in the southern Ryukyu Islands began to show significant 12-hour pressure falls, and winds near the center of the disturbance increased to 25 kt (13 m/sec). In response, JTWC issued a 36-hour Tropical Depression Warning at

241200Z. Pressures continued to drop during the following 12 hours, and satellite and synoptic fixes appeared to converge. Finally, when it became apparent that one circulation center was going to emerge and intensify, JTWC issued a 72-hour Tropical Cyclone Warning at 250000Z.

On 25 August, in response to a short wave trough approaching from the north-northwest, the depression turned northeastward. The reason for the abrupt track change to the northeast was not immediately apparent because two vortices were involved. The low-level circulation center, in the southern portion of the cloud system, weakened, and another center in the northern portion strengthened. This switch in circulation centers initially made it appear as if Roger had executed a sharper turn and had accelerated faster than it actually did.

In addition to the major track change on 25 August, Roger also intensified to a tropical storm. Synoptic data revealed that gale force winds extended out from the circulation center more than 300 nm (555 km) into the southeastern semicircle. This large asymmetrical pattern of gales would accompany

Roger during the remainder of its lifetime. As the tropical cyclone (Figure 3-20-1) moved steadily northeastward, it gradually intensified. Roger reached a peak intensity of 50 kt (26 m/sec) early on 27 August, just prior to making landfall on Shikoku at Cape Muroto, which is located 100 nm (185 km) southwest of the city of Osaka.

At landfall, Roger's convection became more centralized and upper-level outflow remained good. In addition, the cyclone accelerated, increasing winds in the southeastern semicircle. As a consequence, Roger's track across central Honshu created considerable havoc. Two people drowned in swollen rivers and a third was killed in one of many landslides. Some areas in Roger's path recorded over 19 inches (485 mm) of rain.

Widespread disruption of air traffic and railway service stranded over 37,000 travelers. Also, due to high winds, the new Seto Ohashi Bridge across the Inland Sea between Honshu and Shikoku was closed for the first time since it opened in April 1988.

At 271200Z, Tropical Storm Roger moved into the Sea of Japan and continued to accelerate under the influence of stronger westerly winds aloft. Even though the circulation center was over water, the combined effects of surface friction from the rugged topography of northern Honshu and increased westerly winds aloft weakened the tropical cyclone. At 280000Z, the final warning was issued as the extratropical remnants of Roger sped northeastward across Hokkaido.

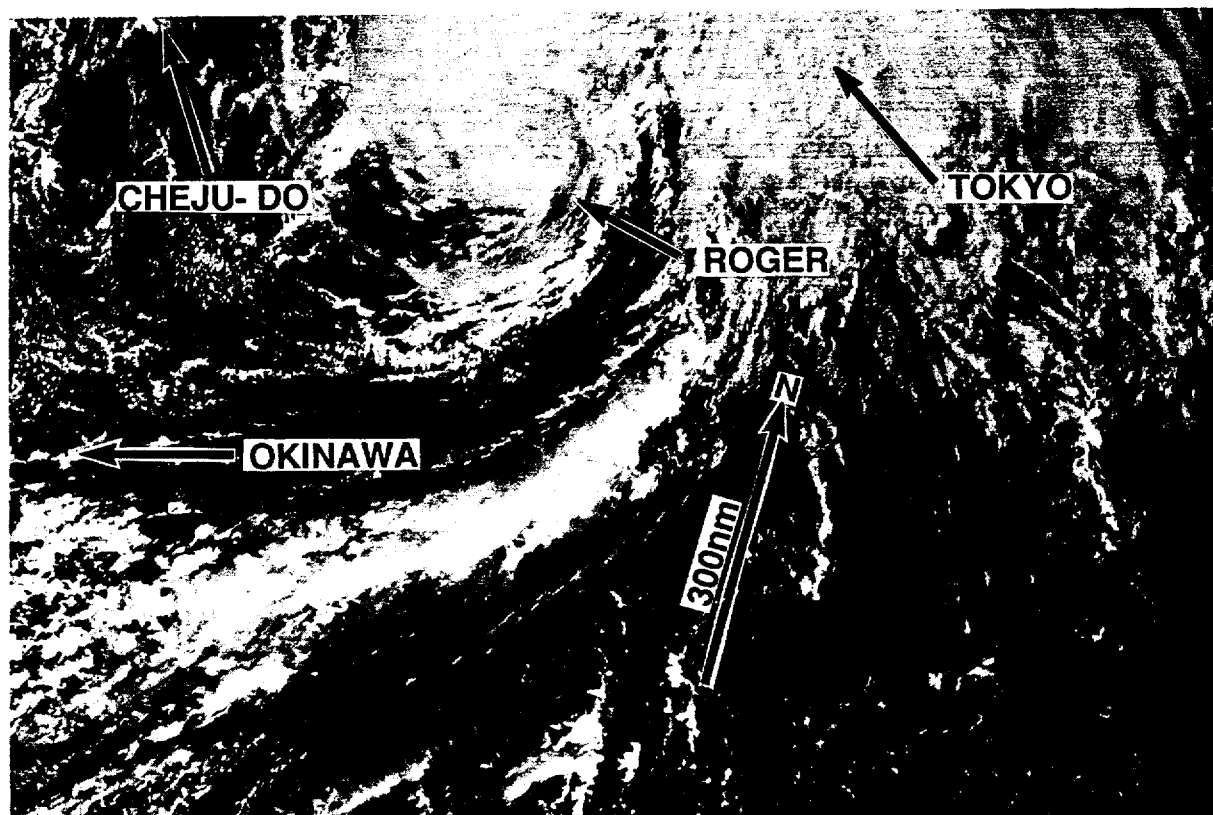


Figure 3-20-1. Near peak intensity, Roger approaches central Honshu (262343Z August DMSP visual imagery).